Better Buildings®
U.S. DEPARTMENT OF ENERGY

Key Accomplishments & Results

OUTDOOR LIGHTING ACCELERATOR

Introduction

The Better Buildings Outdoor Lighting Accelerator (OLA) worked with leaders from states, cities, and regional energy networks to accelerate the deployment of high performance street and area lighting in the public sector, participating in the replacement of over 1.3 million lights over two and half years starting in May 2014 and ending in December 2016. The OLA was designed to identify solutions and document approaches to overcoming the financial, technical, and regulatory barriers to system-wide replacement processes. OLA public sector partners shared effective strategies and best practices to accelerate the adoption of LED street lights to achieve greatly needed energy and electricity cost savings in their jurisdictions.

Importance of Street Lighting Replacement Processes

Local governments are under tight fiscal constraints and are constantly looking for ways to do more with fewer resources. Replace with: Street light systems are a leading expenditure in a municipality's electric utility budget and can account for up to 60% of the bill. Streetlight technology improvements in solid-state lighting (i.e., LEDs) can offer fiscal relief for communities seeking to reduce the cost of municipal operations.

While LED streetlight technology continues to gain greater acceptance in some regions across the country, market perceptions and barriers still prevent local governments from taking full advantage of the energy savings and cost benefits of LED street lighting upgrades. Unfortunately, streetlight retrofits often considered "low-hanging fruit" in pursuit of clean energy goals are still difficult to achieve in some areas due to: asset ownership and maintenance, capital costs, and outdated utility tariffs that do not reflect the benefits of high performance technologies.

OLA collaborated with three states, six regional energy networks, and 16 cities who committed to converting 1.3 million street lights, as well as sharing approaches to project planning and procurement, timely cost information, and performance-based success stories to contribute to a culminating toolkit. OLA partner projects support the growing evidence of market acceptance and satisfaction with LED technology, along with energy savings typically ranging from 30-50%.

Introducing the OLA Toolkit

Thanks to the OLA partners and technical assistance providers, Pacific Northwest National Lab (PNNL), Lawrence Berkeley National Lab (LBNL), and Regional Energy Efficiency Organizations (REEOs) resources for each phase of a municipal street lighting conversion project. The resources listed are in response to the focus areas to remove technical, financial, and regulatory barriers to deployment. This toolkit includes guidance on every step in a typical conversion project lifecycle including advice on working with public utility commissions and utilities have been documented. These resources are meant to assist and encourage continued commitment to retrofit programs across state and local governments. The OLA Toolkit will reside on the Better Buildings Solution Center.

- **Outdoor Lighting Challenges and Solution Pathways Report**

  High level assessment of barriers to the deployment of high performance street and area lighting systems. It provides examples of how cities, states, municipal groups, and utilities address LED street light transitions.

- **Final report on partner status – the Outdoor Lighting Accelerator: Profiles of Municipal LED Street Lighting Upgrades**

  Highlights practical and effective practices to Accelerator partners adopted to successfully implement the adoption of high performance outdoor lighting and improve system-wide replacement processes at the municipal level.

- **Connected Lighting Webinar**

  Reviews some of the lessons learned by early adopters of connected LED street and area lighting systems over the course of multiple pilot projects.

- **Decision-making tools**

  These tools include a Decision Tree Tool for an interactive, visual representation of the decisions needed when upgrading a public, street and area lighting systems, as well as, tools that provide the ability to perform detailed life-cycle cost analysis of the costs and benefits from lighting efficiency projects and compare benefits of municipally owned vs utility owned lights.

- **Dark Skies/Blue Light Guidance**

  Discusses considerations and technical responses to blue light issues associated with LED technology.

- **US DOE Model Technology Specifications**

  The DOE Municipal Solid-State Street Lighting Consortium's Model Specification for LED Roadway Luminaires and Model Specification for Networked Outdoor Lighting Control Systems enables cities, utilities, and other local agencies to assemble effective bid documents for LED street lighting products and accelerate their adoption of systems that can further reduce the energy and maintenance costs of operating their streetlights.

- **Solar Powered Street Lights Information Sheet**

  Provides information on the viability of solar-powered street and area lights.

- **Public Street and Area Lighting Inventory Phase 1: Survey Results**

  Results of a voluntary web-based inventory survey of public street and area lighting across the U.S., intended to improve understanding of the role of public outdoor lighting in national energy use.

- **Adopting Energy-efficient Technologies for Street Lighting: Overcoming Challenges for Utilities**

  Discusses energy-efficient street lighting technologies and conversions from the utility's perspective and identifies various business cases for undertaking street lighting upgrades.

- **Regulatory Barriers and Solution Pathways for Municipal LED Street Lighting Conversions**

  Focuses on regulatory barriers, which were a widespread in the experience of Accelerator participants and lays out pathways that municipalities can take to move street lighting retrofits forward in the presence of these barriers, including regulatory and legislative mechanisms.

- **Regional Approaches and Findings**

  NEEP: LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic.

  MEEA: Street and Outdoor Lighting Resources - MEEA provides a variety of information resources to help Midwestern municipalities and utilities realize the benefits of LED street and outdoor lighting upgrades.

Recognizing Partner Success

The first step of a lighting exchange is understanding the lighting stock and the potential savings associated with the exchange. As a best practice, all partners were asked to develop a system analysis (inventory, audit, or study) to determine the financial and technical feasibility of moving forward with broad-scale retrofit projects.

Throughout the two year Accelerator, partners moved forward in different phases of project implementation. Partners who met key milestones are highlighted below:

- Los Angeles, CA,
- Detroit, MI,
- West Palm Beach, FL.

Cities that had proceeded to their procurement process and issued RFPs:

- Chicago, IL
- Delaware Valley Regional Planning Council, PA
- Huntington Beach, CA
- Portland, ME
- Takoma Park, MD